

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of treating a flue gas containing a dust [or] and a pollutant, said flue gas having a humidity:mass ratio, comprising the steps of:

sensibly cooling the flue gas while maintaining the approximate humidity:mass ratio of said flue gas; and

removing at least a portion of the dust from the flue gas by electrostatic precipitation, thereby forming a dust-reduced flue gas.

2. (Original) The method of claim 1 further including the step of reacting at least a portion of the dust-reduced flue gas with an alkaline material, thereby forming a reaction product.

3. (Original) The method of claim 2 further including the step of contacting at least a portion of the dust-reduced flue gas and reaction product with a collecting liquid, thereby forming a pollutant-laden liquid and a treated flue gas.

4. (Original) The method of claim 1 further including the step of contacting at least a portion of the dust-reduced flue gas with a collecting liquid, thereby forming a dust-containing liquid.
5. (Original) The method of claim 1 wherein the pollutant includes a metal or metallic compound having a metal selected from the group consisting of mercury, selenium, arsenic, lead, chromium, cadmium, beryllium, nickel, manganese, and combinations thereof.
6. (Original) The method of claim 1 wherein the pollutant includes chlorine or a chlorine-containing compound.
7. (Original) The method of claim 2 wherein the alkaline material includes ammonia.
8. (Original) The method of claim 3 wherein the contacting step includes exposing the dust-reduced flue gas and reaction product to an electrostatic precipitator.
9. (Original) The method of claim 3 further including the step of exposing the dust-reduced flue gas and reaction product to an electrostatic precipitator.

10. (Original) The method of claim 1 further including the step of contacting at least a portion of the flue gas with an alkaline material.

11. (Original) The method of claim 10 wherein the alkaline material includes calcium hydroxide.

12. (Original) The method of claim 10 wherein the alkaline material is a solid.

13. (Original) The method of claim 10 wherein the step of contacting with an alkaline material is performed prior to or during the sensibly cooling step.

14. (Original) The method of claim 3 further including the step of exposing at least a portion of the pollutant-laden liquid to an elevated temperature, thereby liberating ammonia or an ammonia derivative from the liquid.

15. (Original) The method of claim 14 wherein the ammonia derivative is urea.

16. (Original) The method of claim 14 wherein the sensibly cooling step generates heat, and at least a portion of the heat is used in the exposing step to provide at least a portion of the elevated temperature.

17. (Original) The method of claim 14 further including the step of increasing the pH of the pollutant-laden liquid.

18. (Previously Presented) The method of claim 14 wherein at least a portion of the liberated ammonia or ammonia derivative is reused by reacting the portion with dust-reduced flue gas, thereby forming reaction product.

19. (Previously Presented) The method of claim 14 wherein at least a portion of the liberated ammonia or ammonia derivative is reused by reacting the portion with flue gas, thereby forming dust-reduced flue gas.

20. (Currently Amended) The method of claim 3 further including the step of increasing the [pH] temperature of the pollutant-laden liquid, thereby liberating ammonia or an ammonia derivative from the liquid.

21. (Original) The method of claim 14 further including the step of contacting at least a portion of the pollutant-laden liquid with an alkaline material, thereby forming a sulfur-containing salt.

22. (Original) The method of claim 3 further including the step of contacting at least a portion of the pollutant-laden liquid with an alkaline material, thereby forming a sulfur-containing salt.

23. (Original) The method of claim 22 wherein the alkaline material includes calcium hydroxide.

24. (Original) The method of claim 22 further including the step of separating the sulfur-containing salt from the pollution-laden liquid.

25. (Original) The method of claim 3 further including the step of heating the pollutant-laden liquid, thereby forming a sulfur-containing salt.

26. (Original) The method of claim 3 further including the step of contacting at least a portion of the pollutant-laden liquid with the collecting liquid sufficient to saturate the pollutant-laden liquid with at least one ammonium-containing compound, thereby creating at least one insoluble sulfur-containing compound.

27. (Previously Presented) The method of claim 22 further including the step of separating a metal or metallic compound from the pollutant-laden liquid.

28. (Original) The method of claim 22 further including the step of reducing the temperature of the pollutant-laden liquid, thereby forming a nitrogen-containing salt.

29. (Original) The method of claim 28 wherein the temperature-reducing step is performed subsequent to the contacting step which results in the formation of a sulfur-containing salt, thereby forming the nitrogen-containing salt subsequent to the formation of the sulfur-containing salt.

30. (Original) The method of claim 3 further including the step of reducing the temperature of the pollutant-laden liquid, thereby forming a nitrogen-containing salt.

31. (Original) The method of claim 30 further including the step of separating the nitrogen-containing salt from the pollutant-laden liquid.

32. (Original) The method of claim 30 further including the step of increasing the pH of the pollutant-laden liquid.

33. (Original) The method of claim 3 further including the step of increasing the pH of the pollutant-laden liquid, thereby forming a nitrogen-containing salt.

34. (Original) The method of claim 3 further including the step of reducing the temperature of the liquid, thereby forming a chlorine-containing salt.

35. (Original) The method of claim 34 further including the step of separating the chlorine-containing salt from the pollutant-laden liquid.

36. (Original) The method of claim 34 further including the step of increasing the pH of the pollutant-laden liquid.

37. (Original) The method of claim 3 further including the step of increasing the pH of the pollutant-laden liquid, thereby forming a chlorine-containing salt.

38. (Original) The method of claim 3 wherein the sensibly cooling step generates heat, and at least a portion of the heat is used to increase the temperature of the treated flue gas.

39. (Currently Amended) A method of treating a flue gas containing a dust [or] and a pollutant, comprising the steps of:

reacting at least a portion of the flue gas with [an alkaline material] ammonia
or an ammonia derivative, thereby forming a reaction product;

contacting at least a portion of the reaction product with a collecting liquid,
thereby forming a pollutant-laden liquid and a treated flue gas;

exposing at least a portion of the pollutant-laden liquid to an elevated
temperature, thereby liberating ammonia or an ammonia derivative from the liquid; and

reusing at least a portion of the liberated ammonia or ammonia derivative by
reacting the portion with additional flue gas, thereby forming additional reaction product.

40. (Original) The method of claim 39 wherein the contacting step includes exposing the reaction product to an electrostatic precipitator.

41. (Original) The method of claim 39 further including the step of exposing the reaction product to an electrostatic precipitator.

42.-60. (Withdrawn)